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THELEN REID & PRIEST LLP
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TRP Docket No.: INTG-001

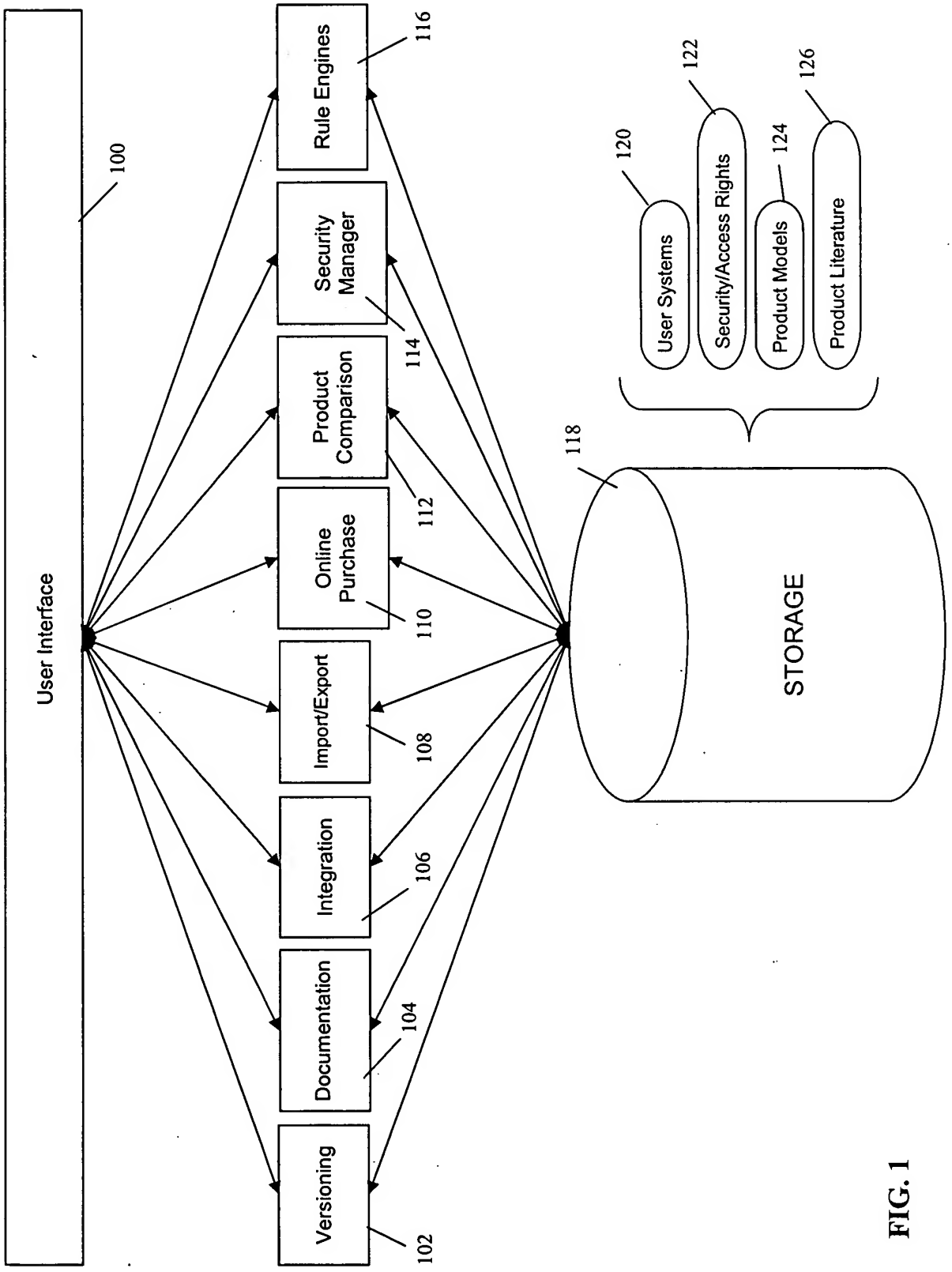


FIG. 1

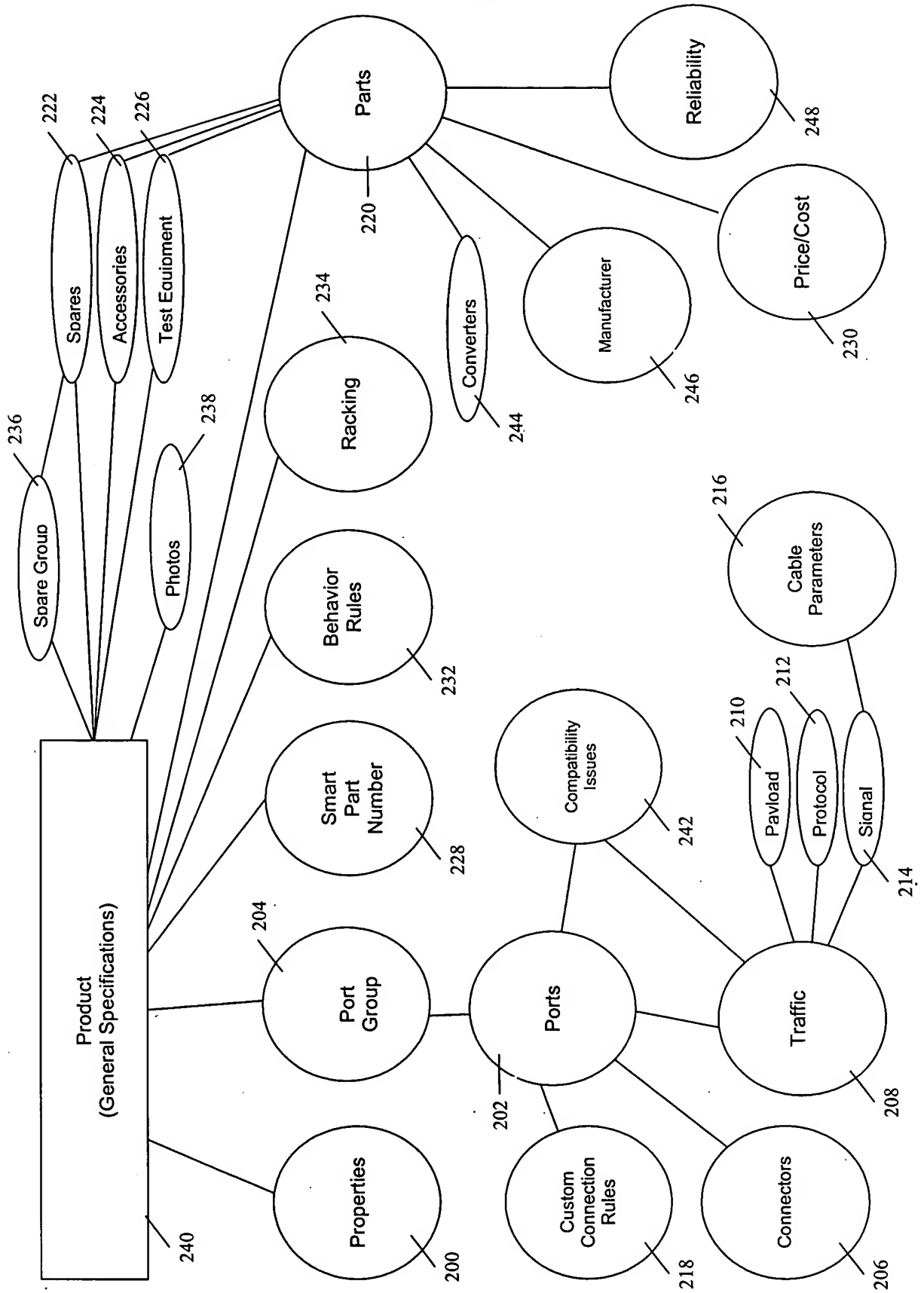

Product
(General Specifications)
240
Properties
200
Port
Group
204
Smart
Part
Number
228
Behavior
Rules
232
Racking
234
Soare Group
236
Photos
238
Soares
222
Accessories
224
Test Equipment
226
Parts
220
Converters
244
Manufacturer
246
Price/Cost
230
Reliability
248
Ports
202
Custom
Connection
Rules
218
Compatibility
Issues
242
Traffic
208
Connectors
206
Cable
Parameters
216
Payload
210
Protocol
212
Signal
214

FIG. 2

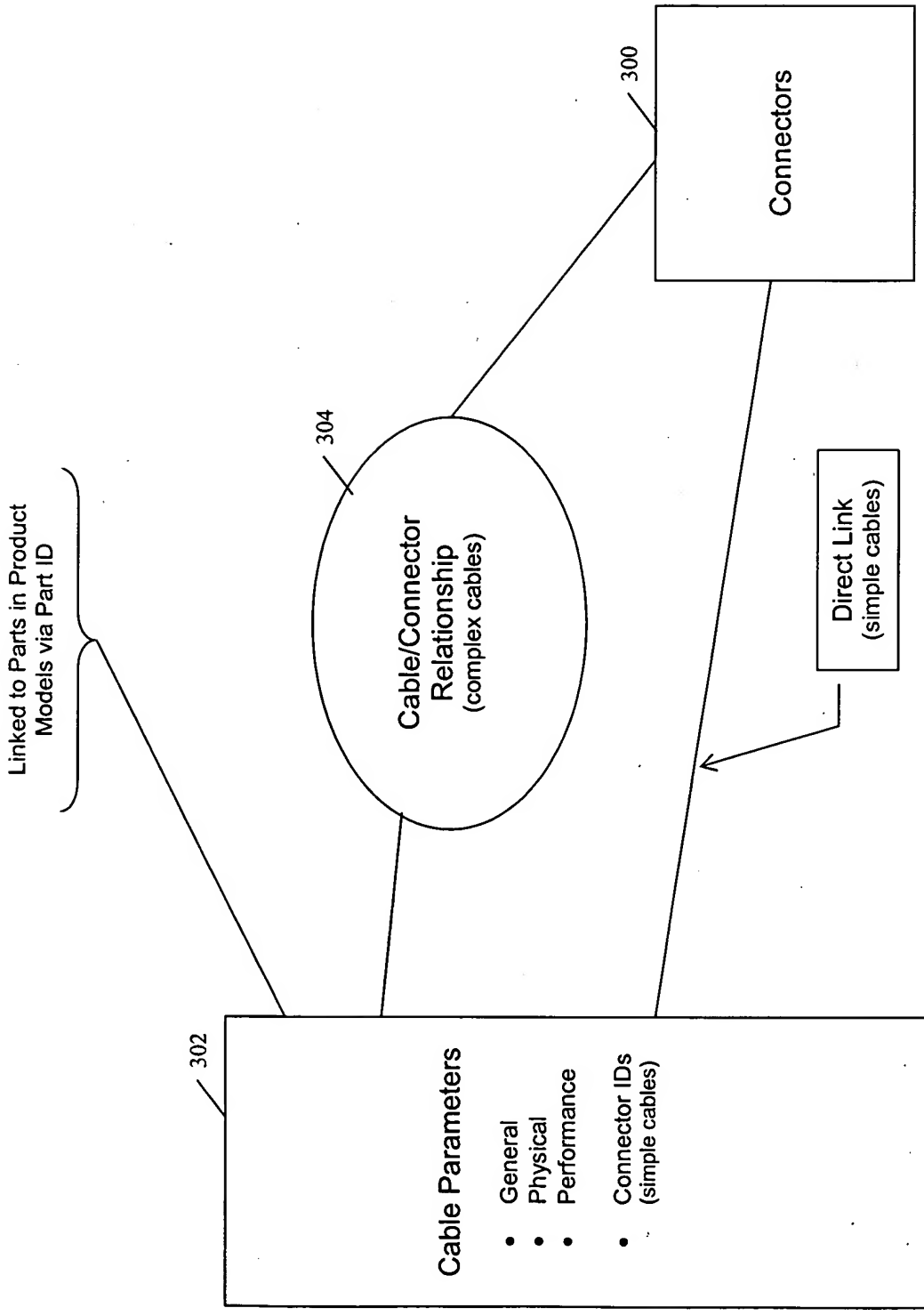

Connectors
300
Cable/Connector Relationship (complex cables)
304
Direct Link (simple cables)
Linked to Parts in Product Models via Part ID
Cable Parameters
General
Physical
Performance
Connector IDs (simple cables)
302

FIG. 3

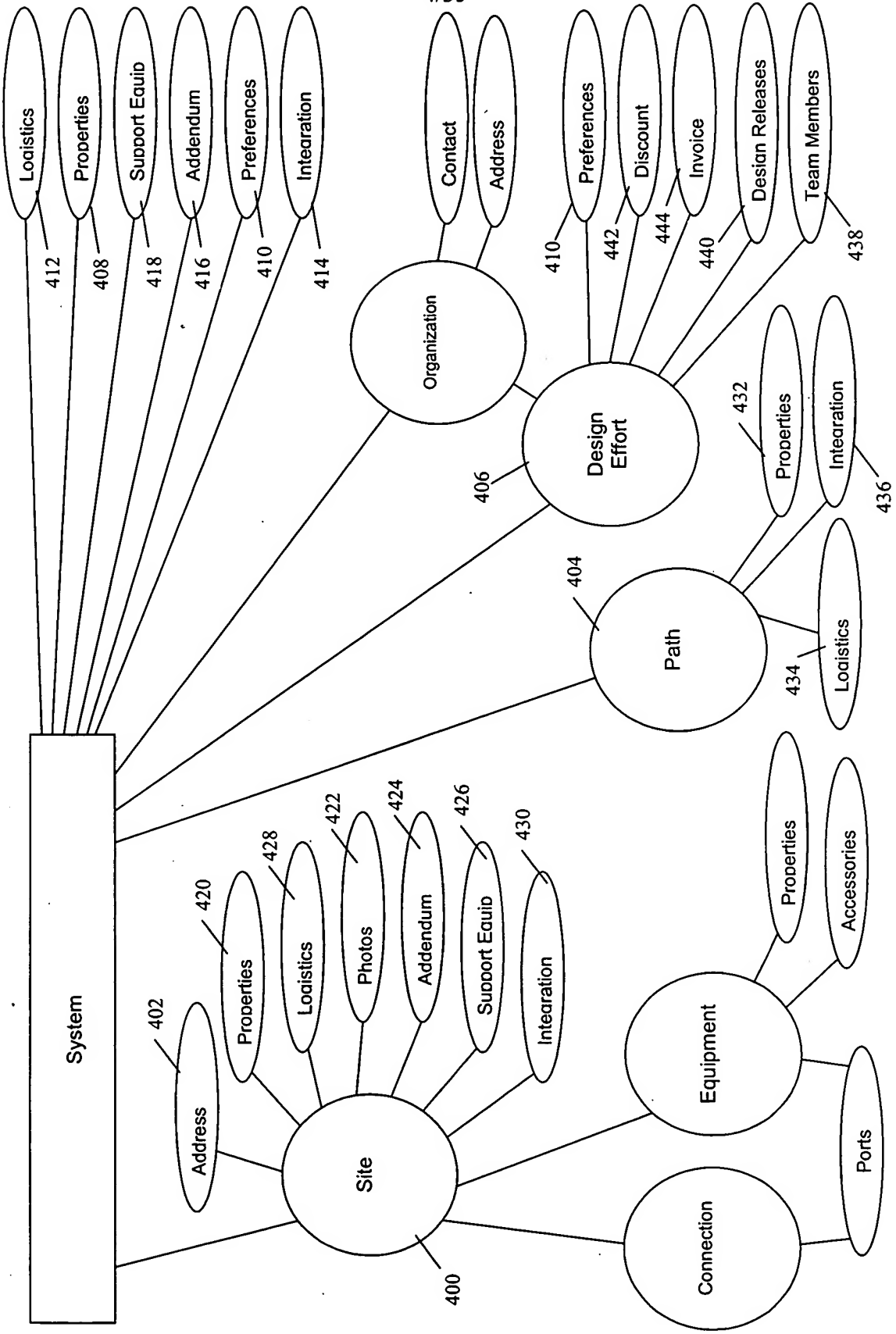

System
Logistics
412
Properties
408
Support Equip
418
Addendum
416
Preferences
410
Integration
414
Organization
Contact
Address
Design Effort
406
Preferences
410
Discount
442
Invoice
444
Design Releases
440
Team Members
438
Properties
432
Integration
436
Path
404
Logistics
434
Site
400
Address
402
Properties
420
Logistics
428
Photos
422
Addendum
424
Support Equip
426
Integration
430
Equipment
Properties
Accessories
Connection
Ports

FIG. 4

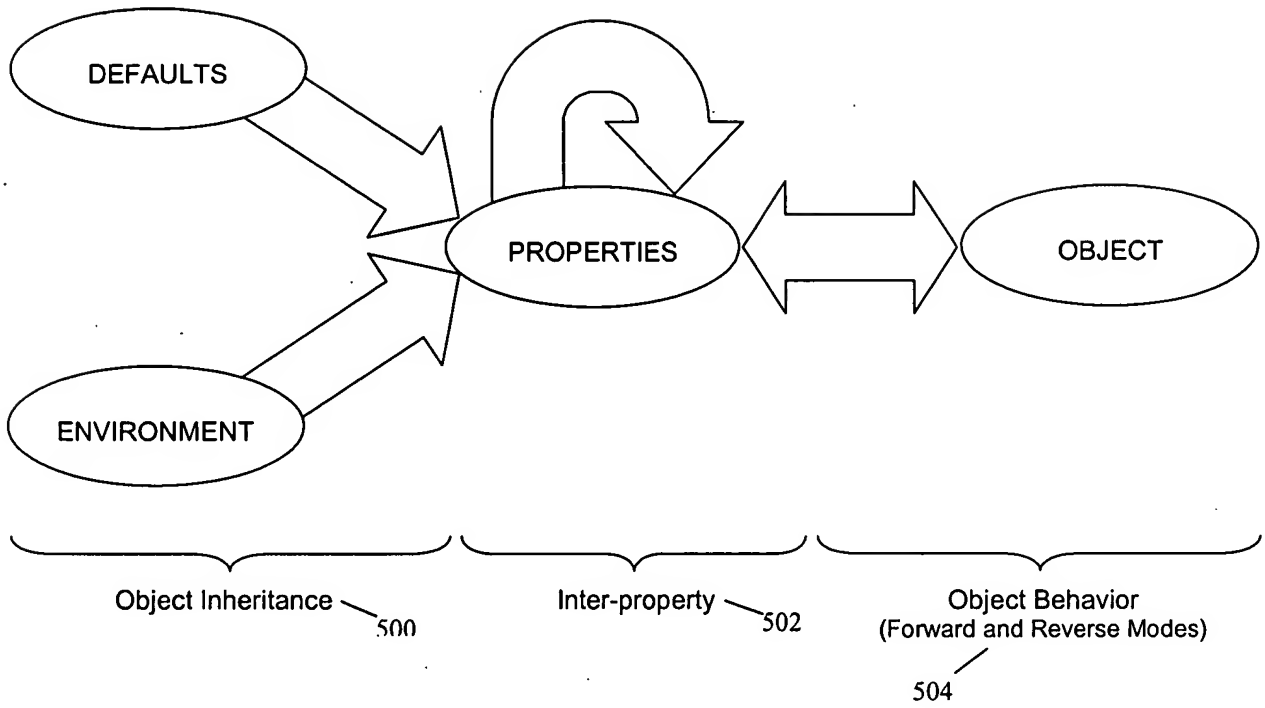

DEFAULTS
PROPERTIES
OBJECT
ENVIRONMENT
Object Inheritance
500
Inter-property
502
Object Behavior
(Forward and Reverse Modes)
504

FIG. 5

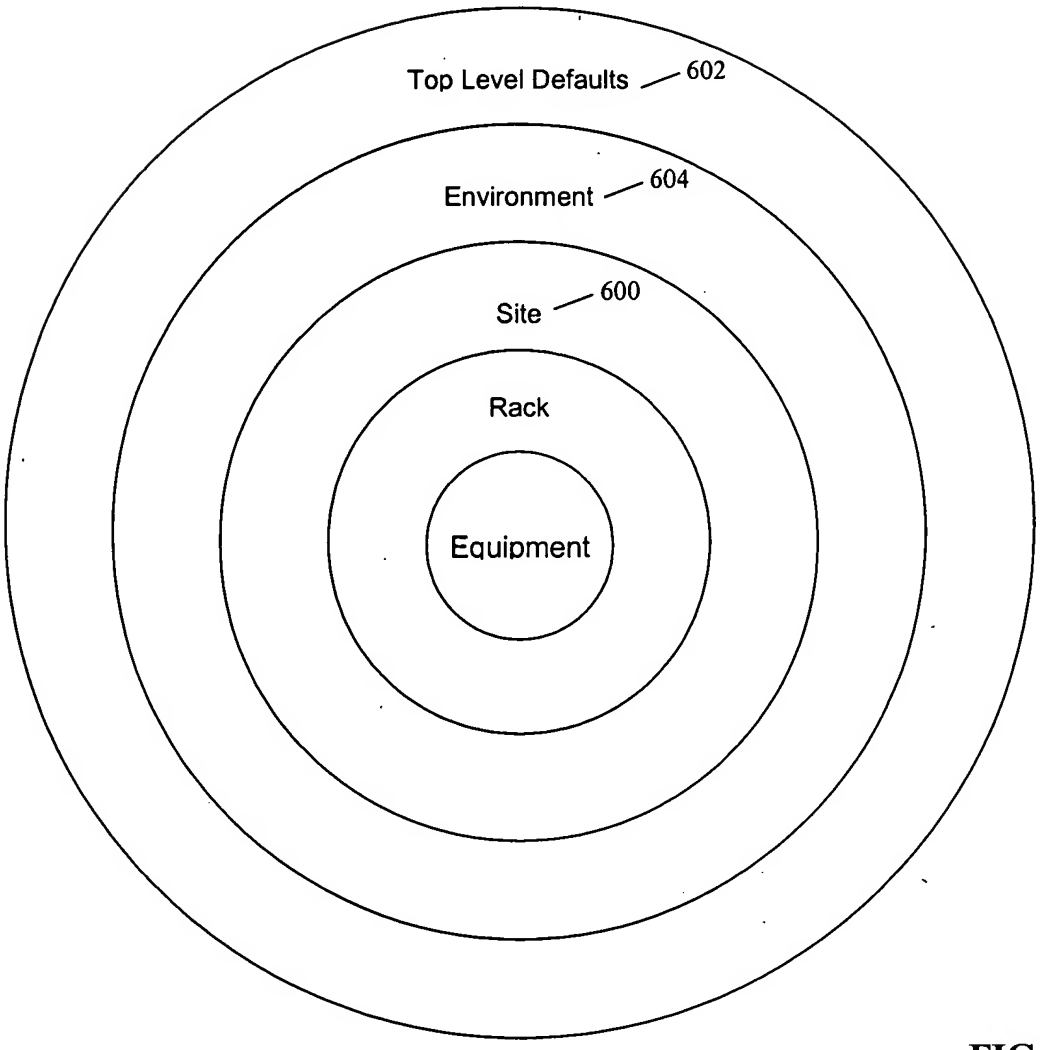


FIG. 6

Notes:

- Top Level Defaults -
  These defaults are user settings that specify how the system will function and initial or default configuration settings.

- Environment -
  The environment, in which an equipment object lives, encompasses all information available within a system and includes data made available through the integration of 3rd party applications.

- Container -
  Containers are objects that host other objects. For example, the site object hosts the rack and the rack host the equipment (when the equipment is racked, otherwise the site hosts the equipment).

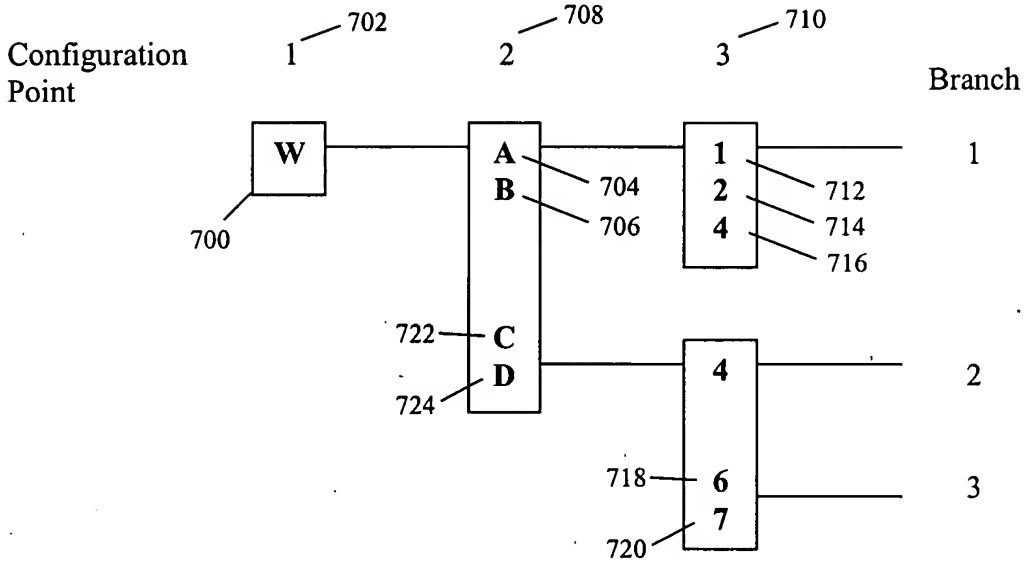
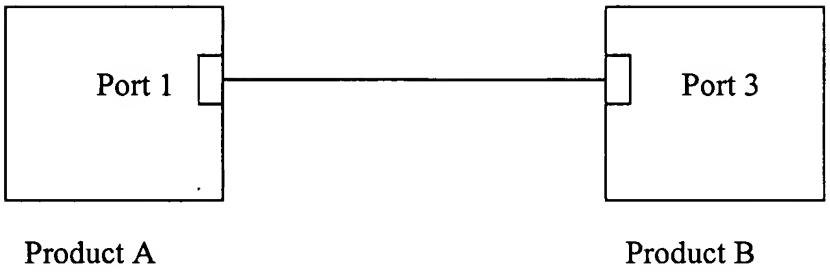

Configuration Point
1
2
3
Branch
702
708
710
W
A
B
C
D
1
2
4
4
6
7
700
704
706
712
714
716
722
724
718
720
1
2
3

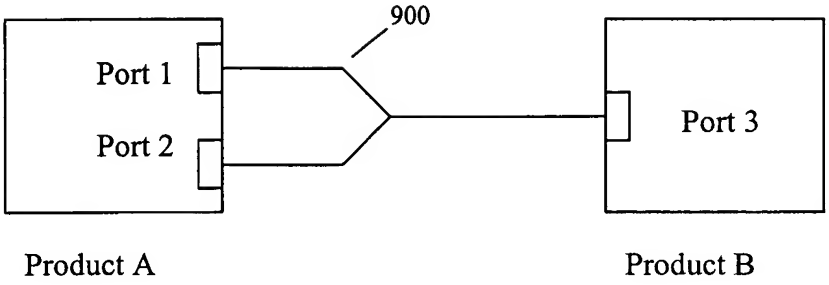
FIG. 7



800
802
804

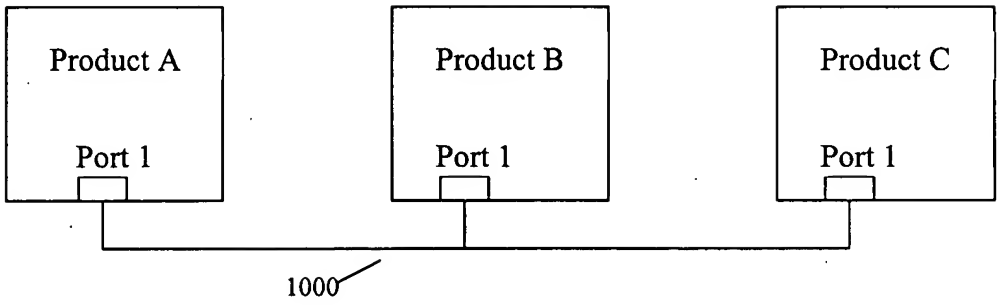
Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
1	1	A	1	55	0
1	2	B	3	55	0

FIG. 8



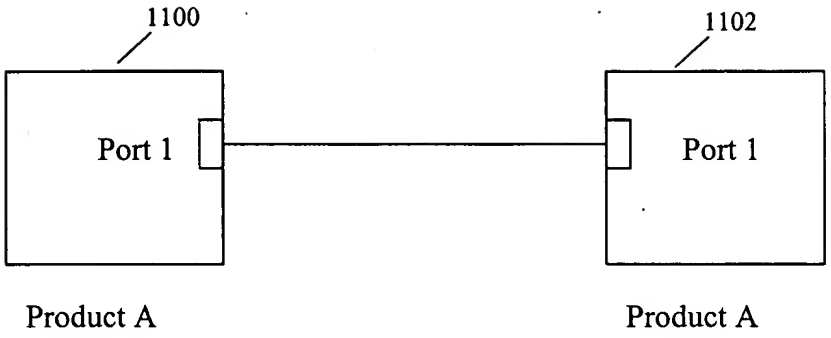
Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
2	1	A	1	60	1
2	2	A	2	60	1
2	3	B	3	60	0

FIG. 9



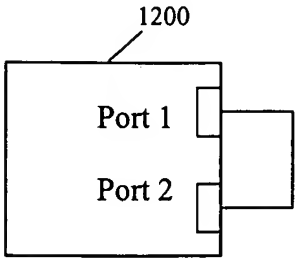
Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
3	1	A	1	75	0
3	2	B	1	75	0
3	3	C	1	75	0

FIG. 10



Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
4	1	A	1	90	0
4	2	A	1	90	0

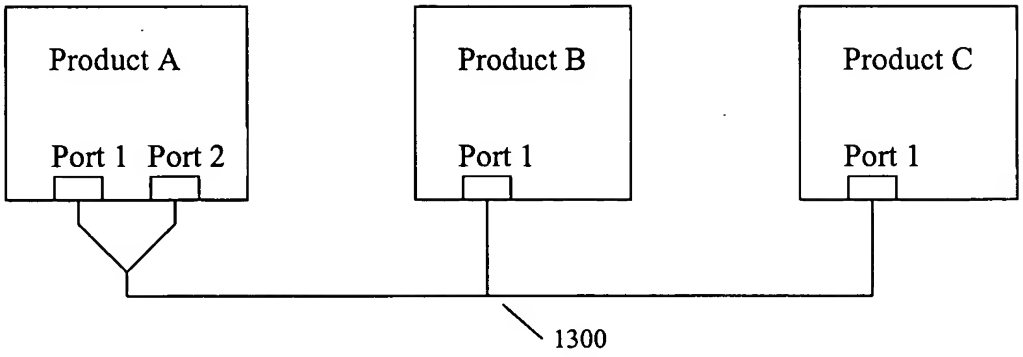
FIG. 11



Product A

Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
5	1	A	1	95	1
5	2	A	2	95	1

FIG. 12



Rule ID	Fragment ID	Product	Port	Cable ID	Self Connect
6	1	A	1	80	1
6	2	A	2	80	1
6	3	B	1	80	0
6	4	C	1	80	0

FIG. 13

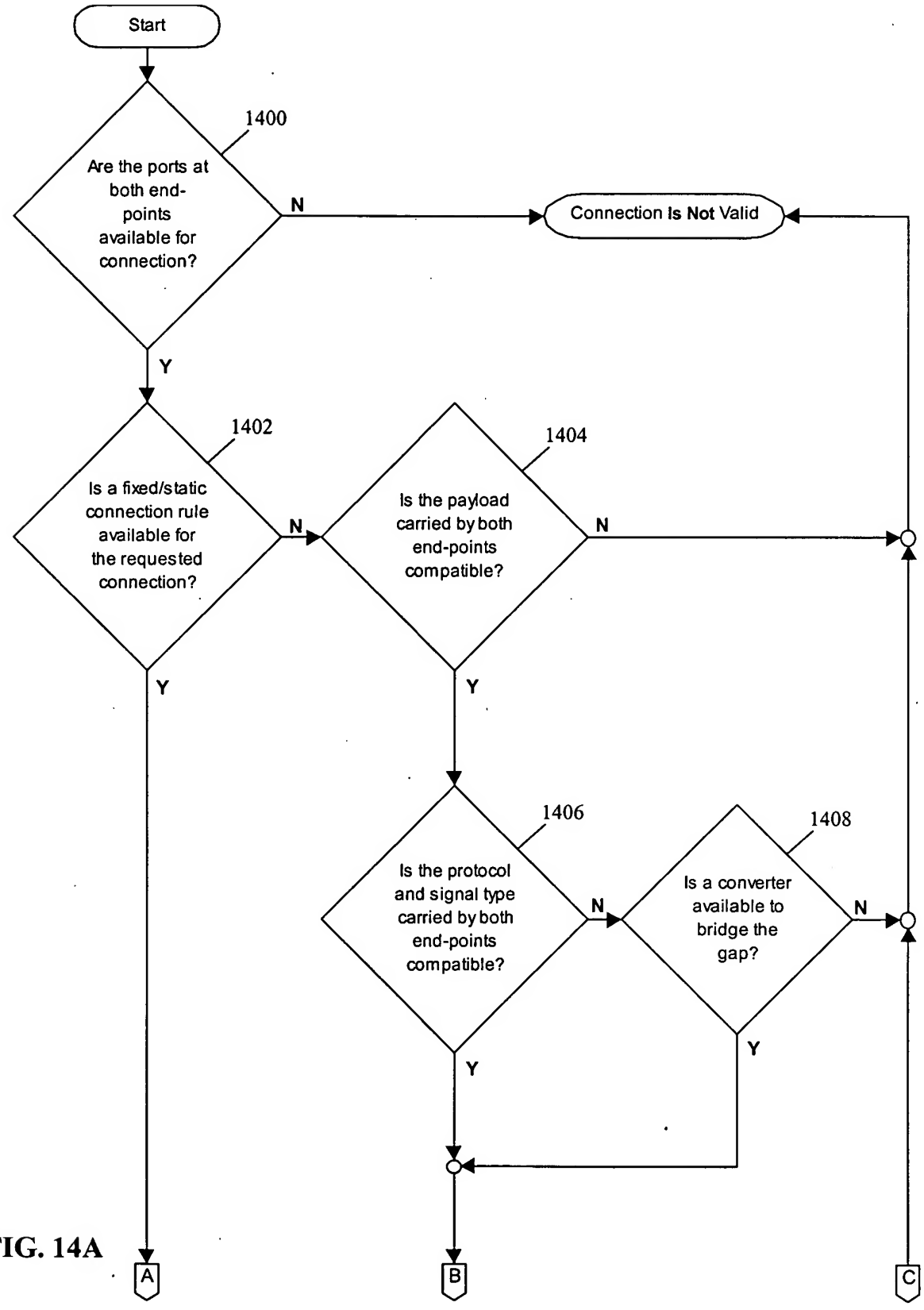

Start
1400
Are the ports at both end-points available for connection?
N
Connection Is Not Valid
Y
1402
Is a fixed/static connection rule available for the requested connection?
N
1404
Is the payload carried by both end-points compatible?
N
Y
Y
1406
Is the protocol and signal type carried by both end-points compatible?
N
1408
Is a converter available to bridge the gap?
N
Y
Y
A
B
C

FIG. 14A

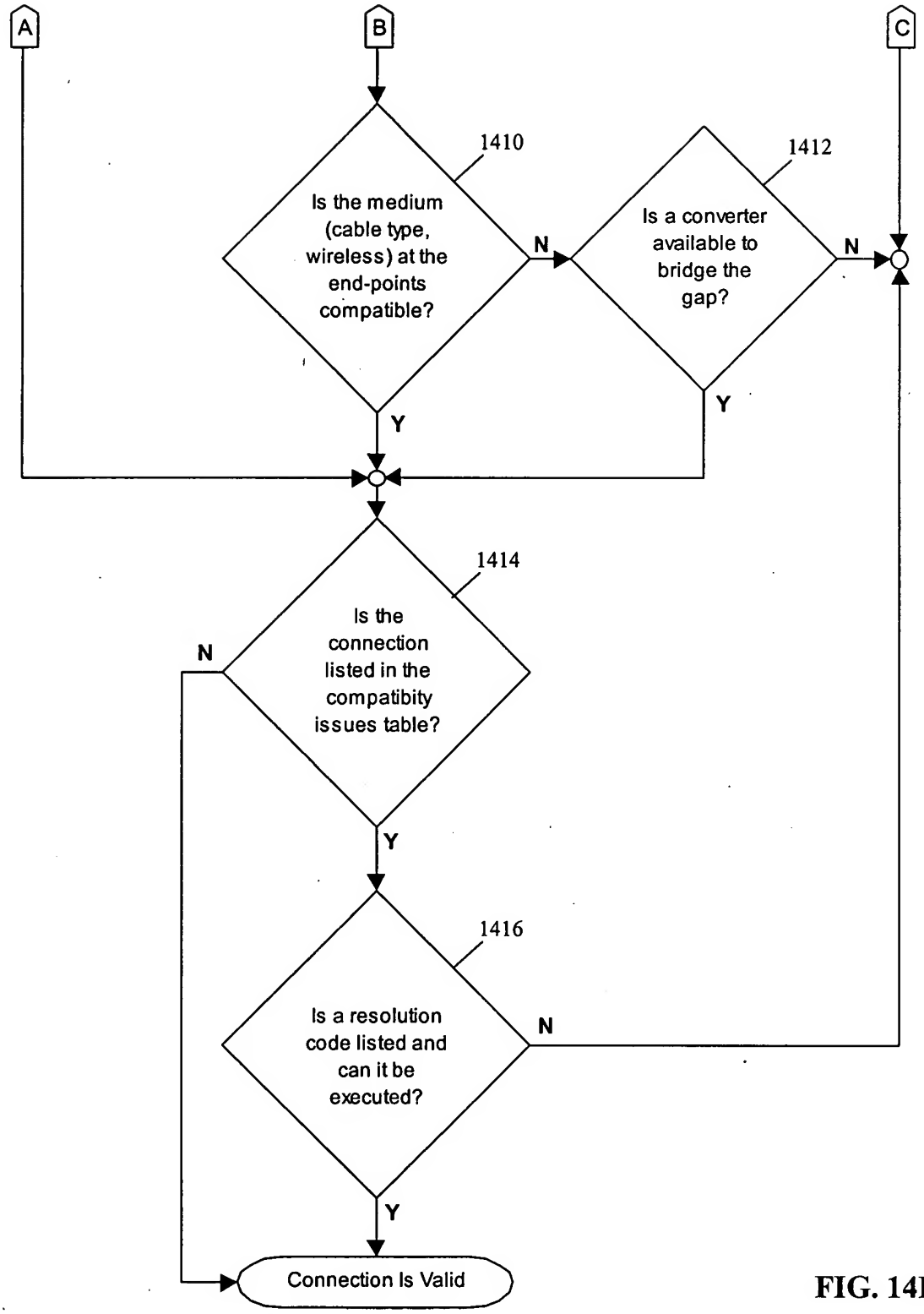

A
B
C
1410
Is the medium (cable type, wireless) at the end-points compatible?
N
1412
Is a converter available to bridge the gap?
N
Y
Y
1414
Is the connection listed in the compatibity issues table?
N
Y
1416
Is a resolution code listed and can it be executed?
N
Y
Connection Is Valid

FIG. 14B

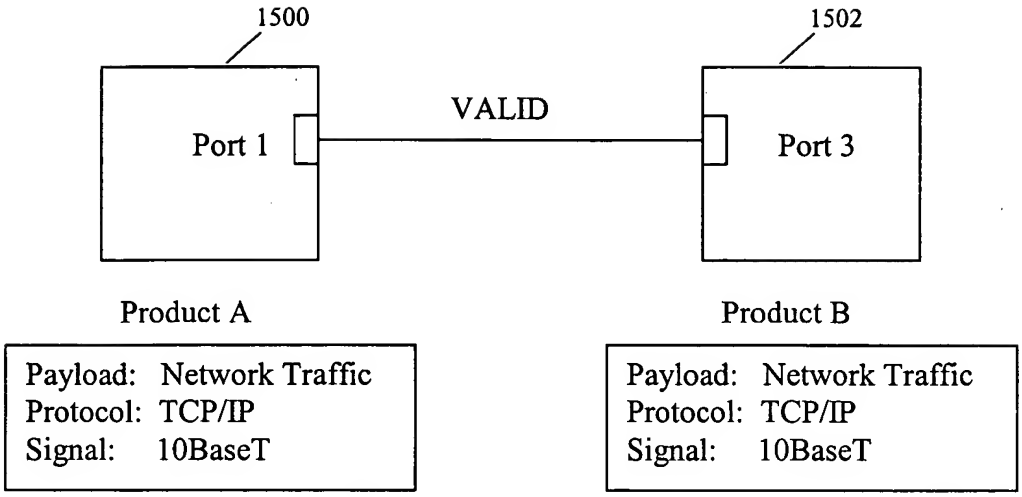

1500
1502
VALID
Port 1
Port 3
Product A
Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseT
Product B
Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseT

FIG. 15

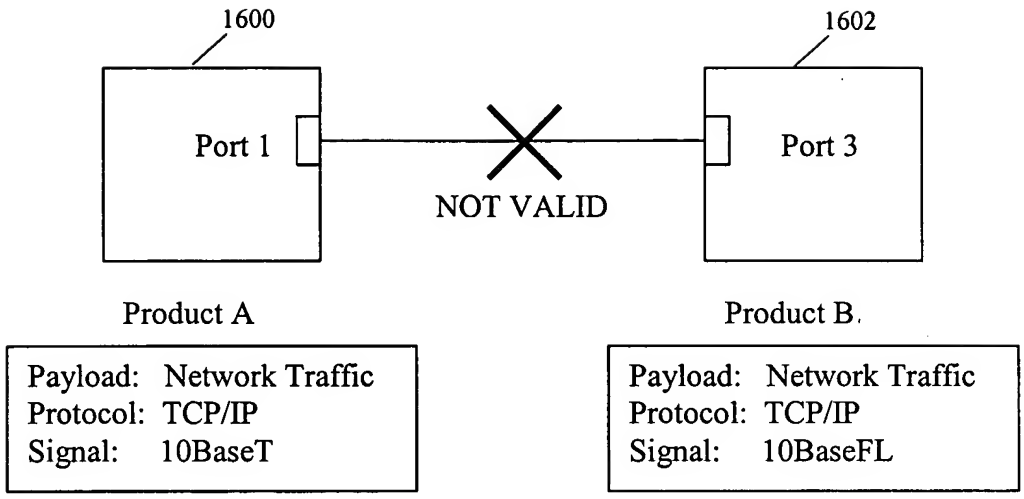
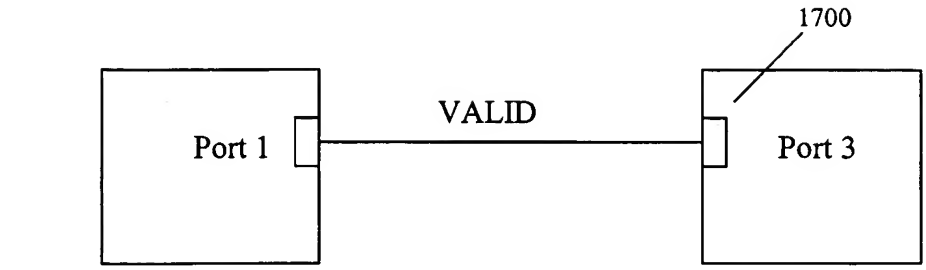

1600
1602
Port 1
Port 3
NOT VALID
Product A
Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseT
Product B.
Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseFL

FIG. 16



Product A

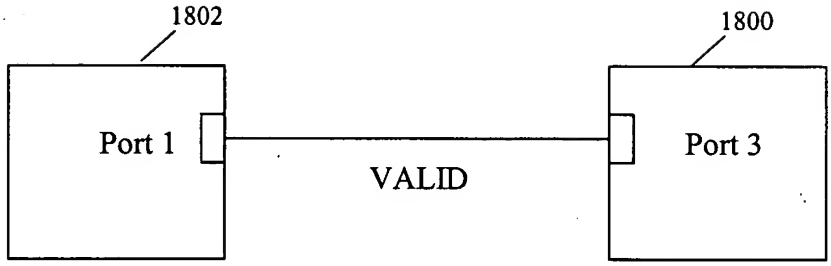
Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseT

Product B

Payload: Network Traffic
Protocol: TCP/IP
Signal: 100BaseTX
Default: True
AutoDetect: True

Payload: Network Traffic
Protocol: TCP/IP
Signal: 10BaseT
Default: False
AutoDetect: True

FIG. 17



Product A

Product B

Payload:	Network Traffic
Protocol:	TCP/IP
Signal:	10BaseT
Default:	True

Payload:	Network Traffic
Protocol:	TCP/IP
Signal:	100BaseTX

Payload:	Network Traffic
Protocol:	TCP/IP
Signal:	100BaseTX
Default:	False
Condition	$PROP0002$="Upgradeable"
Effect:	$PROP0002$="100BaseTx Support"

FIG. 18

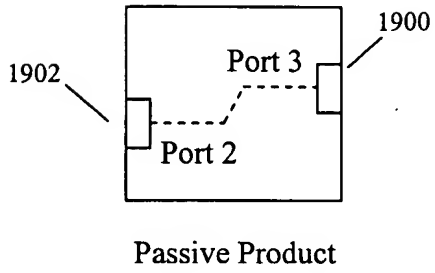


FIG. 19A

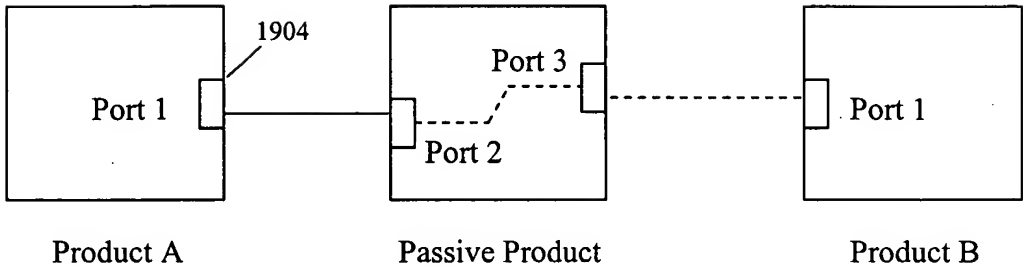


FIG. 19B

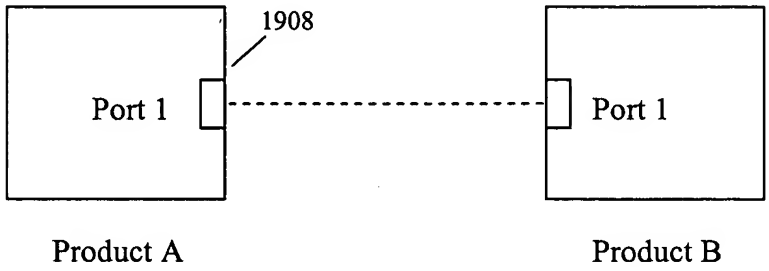


FIG. 19C

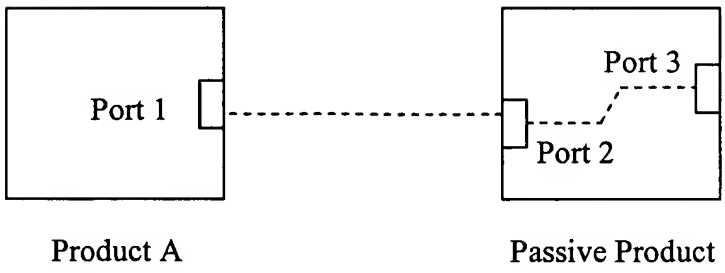


FIG. 19D

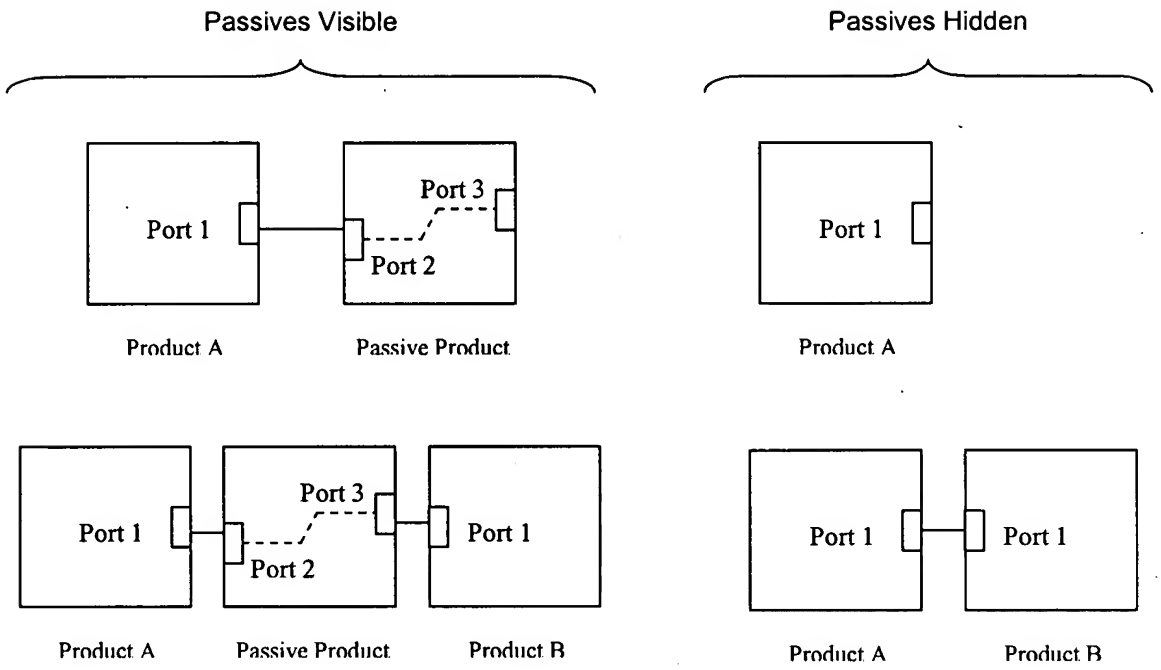

Passives Visible
Passives Hidden
Port 1
Port 3
Port 2
Port 1
Product A
Passive Product
Product A
Port 1
Port 3
Port 2
Port 1
Port 1
Port 1
Product A
Passive Product
Product B
Product A
Product B

FIG. 20

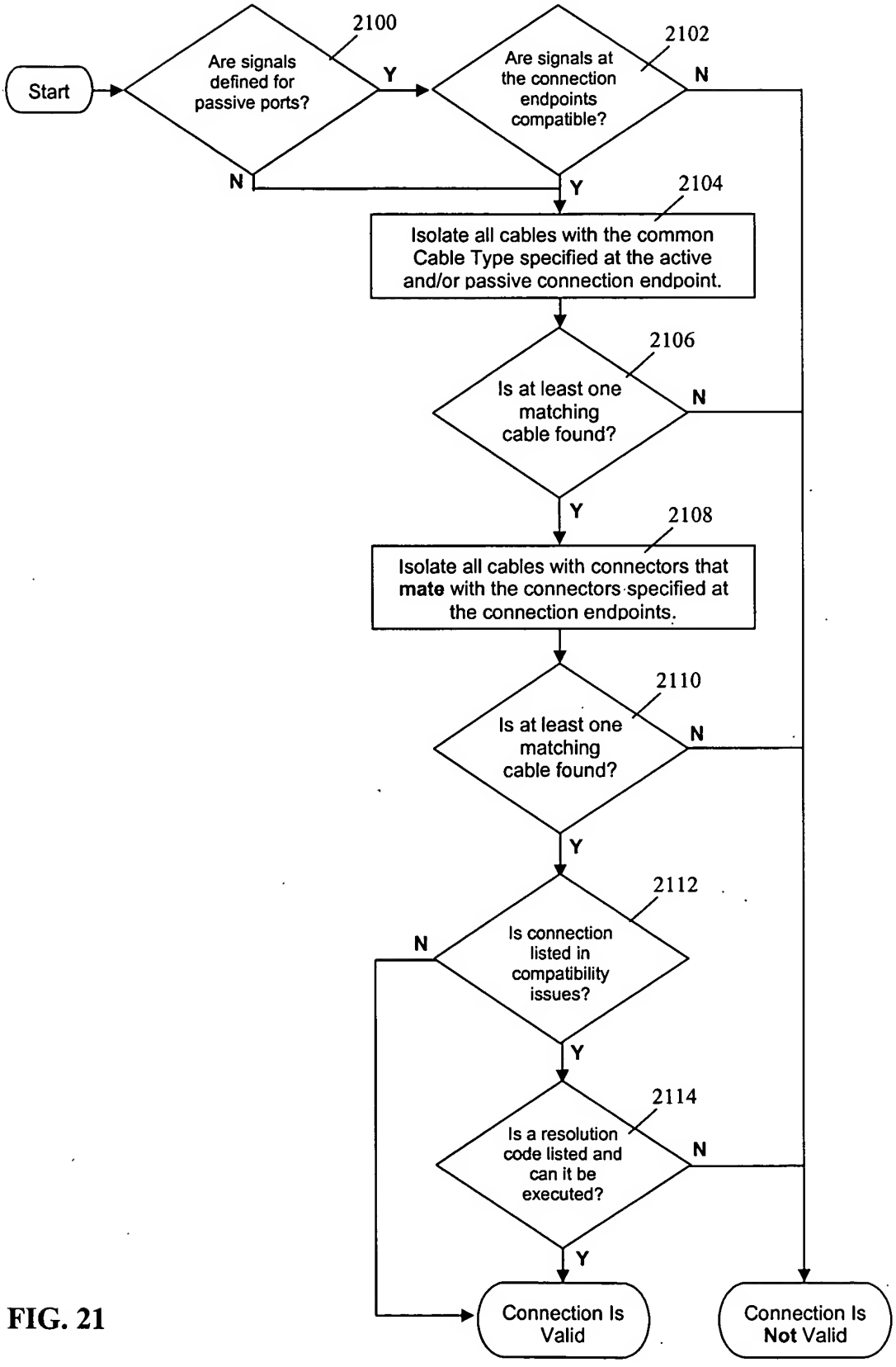

Start
Are signals defined for passive ports?
2100
Y
N
Are signals at the connection endpoints compatible?
2102
N
Y
Isolate all cables with the common Cable Type specified at the active and/or passive connection endpoint.
2104
Is at least one matching cable found?
2106
N
Y
Isolate all cables with connectors that mate with the connectors specified at the connection endpoints.
2108
Is at least one matching cable found?
2110
N
Y
Is connection listed in compatibility issues?
2112
N
Y
Is a resolution code listed and can it be executed?
2114
N
Y
Connection Is Valid
Connection Is Not Valid

FIG. 21

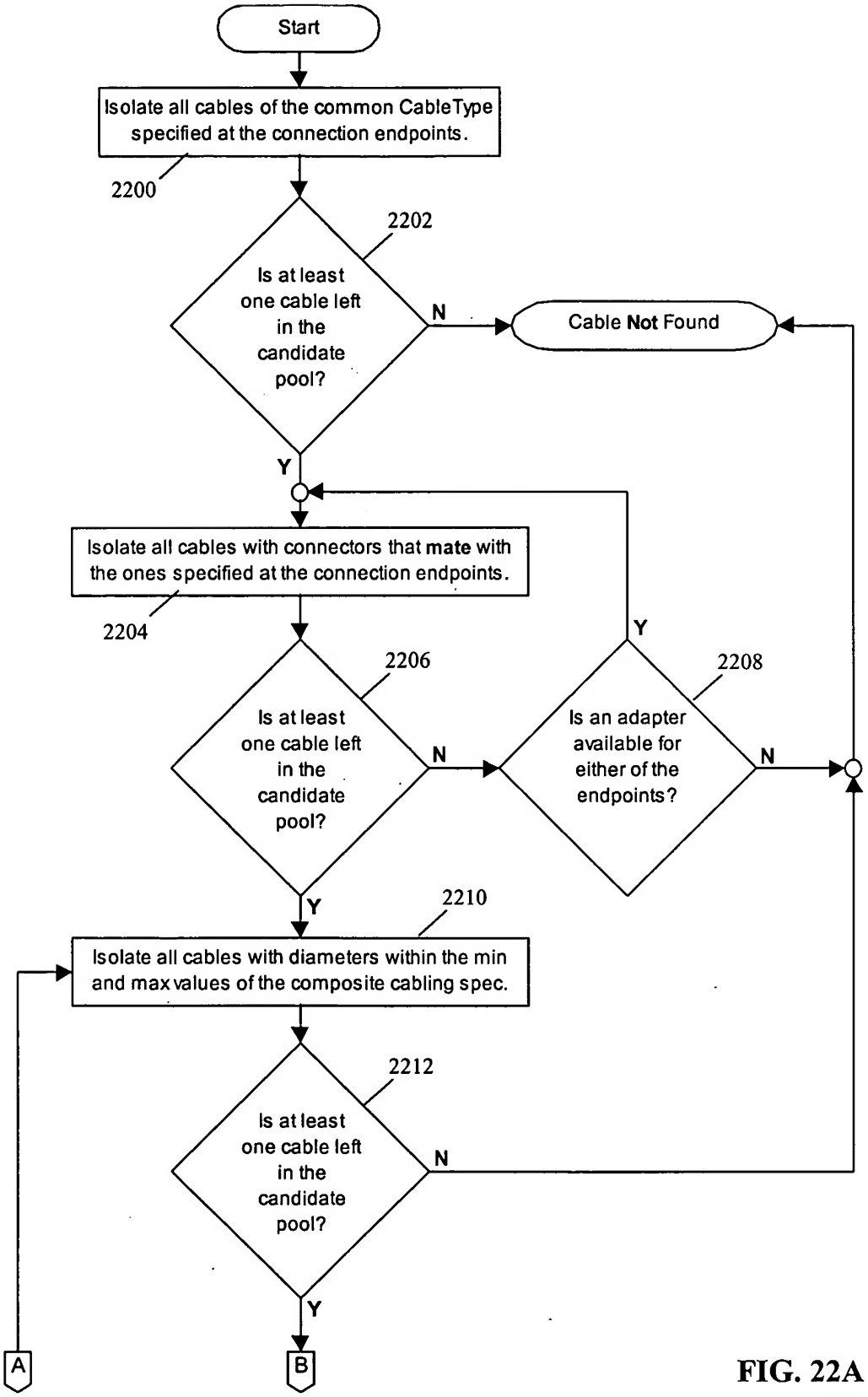

Start
Isolate all cables of the common CableType specified at the connection endpoints.
2200
2202
Is at least one cable left in the candidate pool?
N
Cable Not Found
Y
Isolate all cables with connectors that mate with the ones specified at the connection endpoints.
2204
2206
Is at least one cable left in the candidate pool?
N
Y
2208
Is an adapter available for either of the endpoints?
N
Y
2210
Isolate all cables with diameters within the min and max values of the composite cabling spec.
2212
Is at least one cable left in the candidate pool?
N
Y
A
B

FIG. 22A

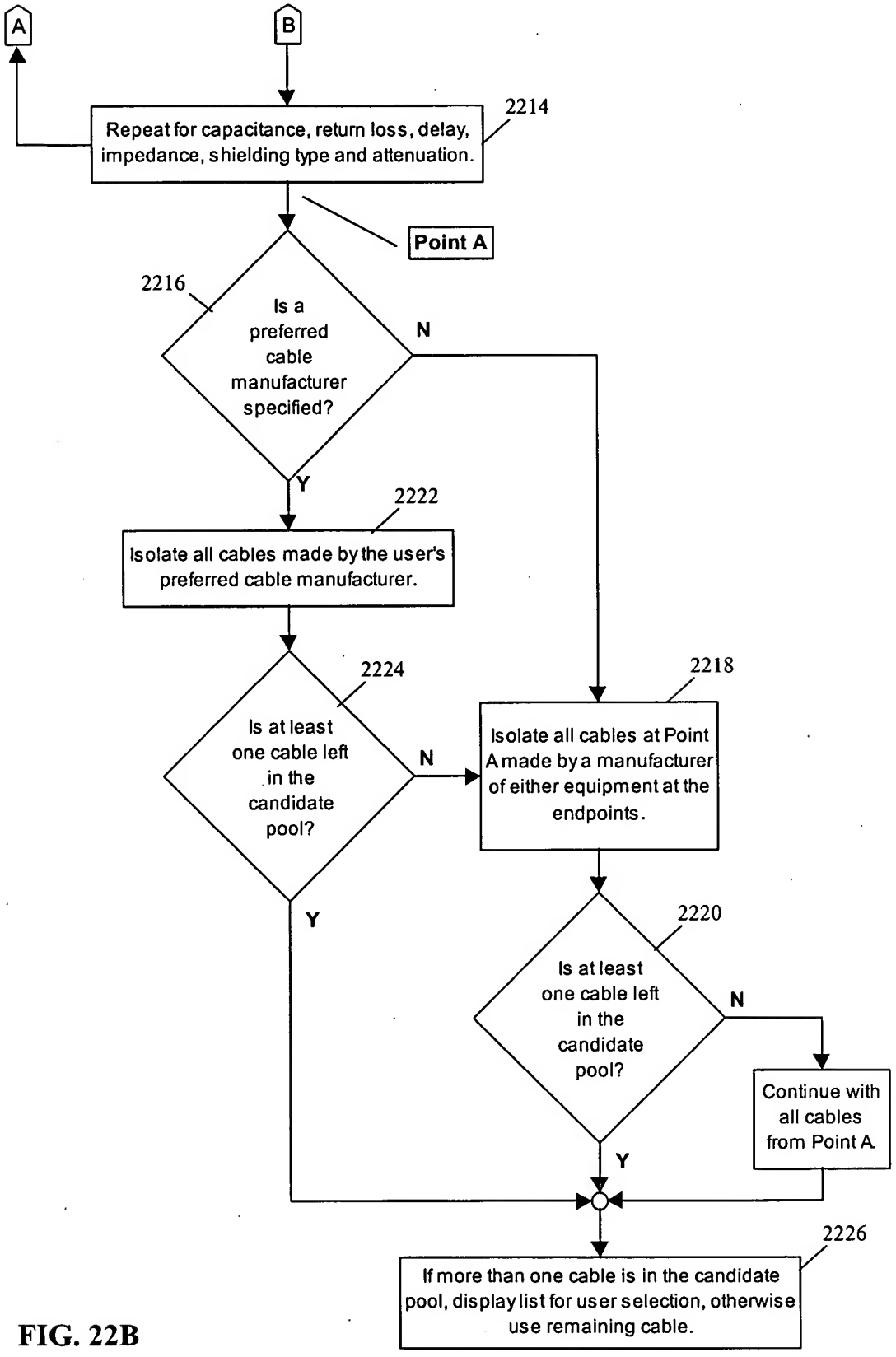

A
B
Repeat for capacitance, return loss, delay, impedance, shielding type and attenuation.
2214
Point A
2216
Is a preferred cable manufacturer specified?
N
Y
2222
Isolate all cables made by the user's preferred cable manufacturer.
2224
Is at least one cable left in the candidate pool?
N
Y
2218
Isolate all cables at Point A made by a manufacturer of either equipment at the endpoints.
2220
Is at least one cable left in the candidate pool?
N
Y
Continue with all cables from Point A.
2226
If more than one cable is in the candidate pool, display list for user selection, otherwise use remaining cable.

FIG. 22B

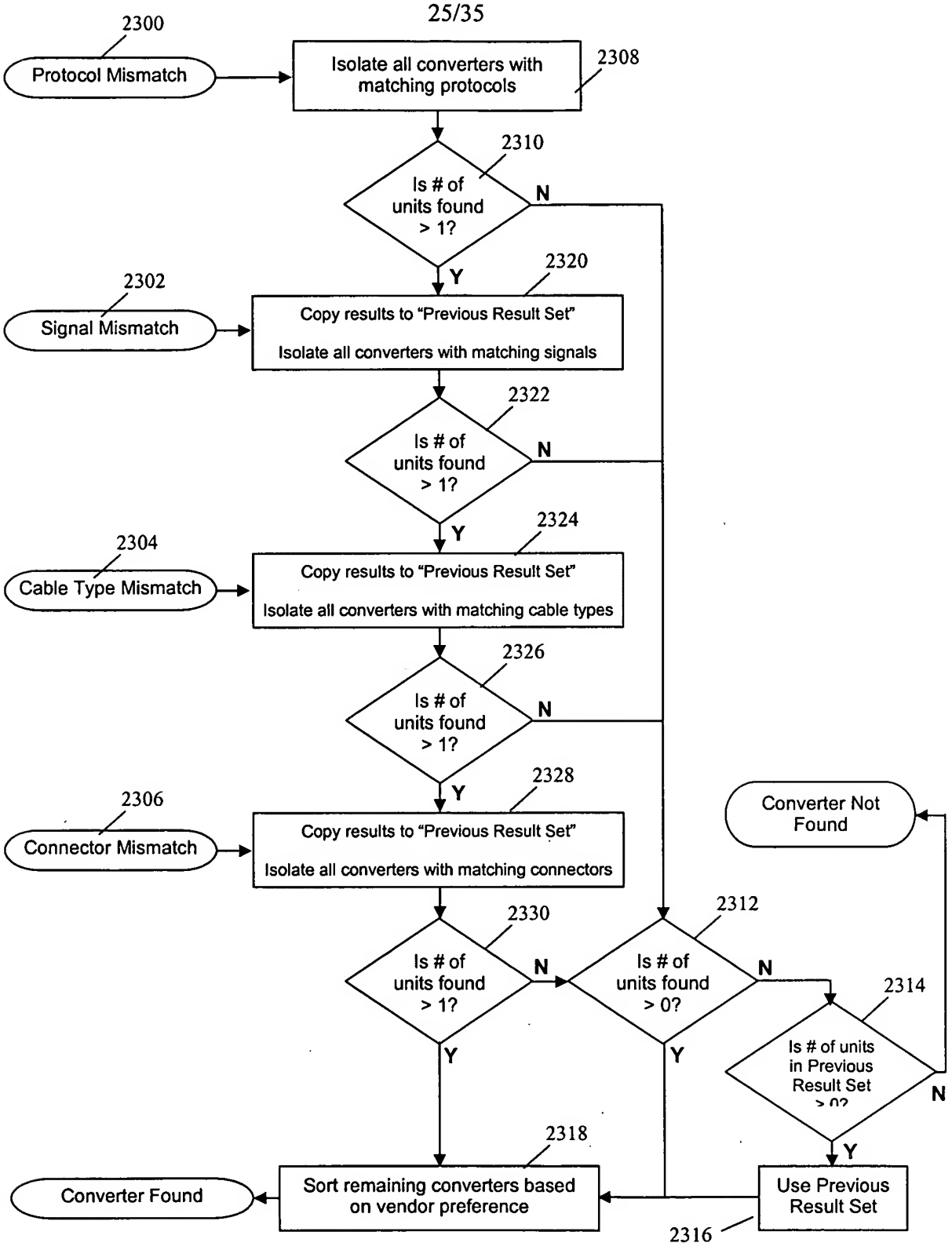

2300
Protocol Mismatch
Isolate all converters with matching protocols
2308
2310
Is # of units found > 1?
N
Y
2320
2302
Signal Mismatch
Copy results to "Previous Result Set"
Isolate all converters with matching signals
2322
Is # of units found > 1?
N
Y
2324
2304
Cable Type Mismatch
Copy results to "Previous Result Set"
Isolate all converters with matching cable types
2326
Is # of units found > 1?
N
Y
2328
2306
Connector Mismatch
Copy results to "Previous Result Set"
Isolate all converters with matching connectors
Converter Not Found
2330
Is # of units found > 1?
N
Y
2312
Is # of units found > 0?
N
Y
2314
Is # of units in Previous Result Set > 0?
N
Y
2318
Converter Found
Sort remaining converters based on vendor preference
Use Previous Result Set
2316

FIG. 23

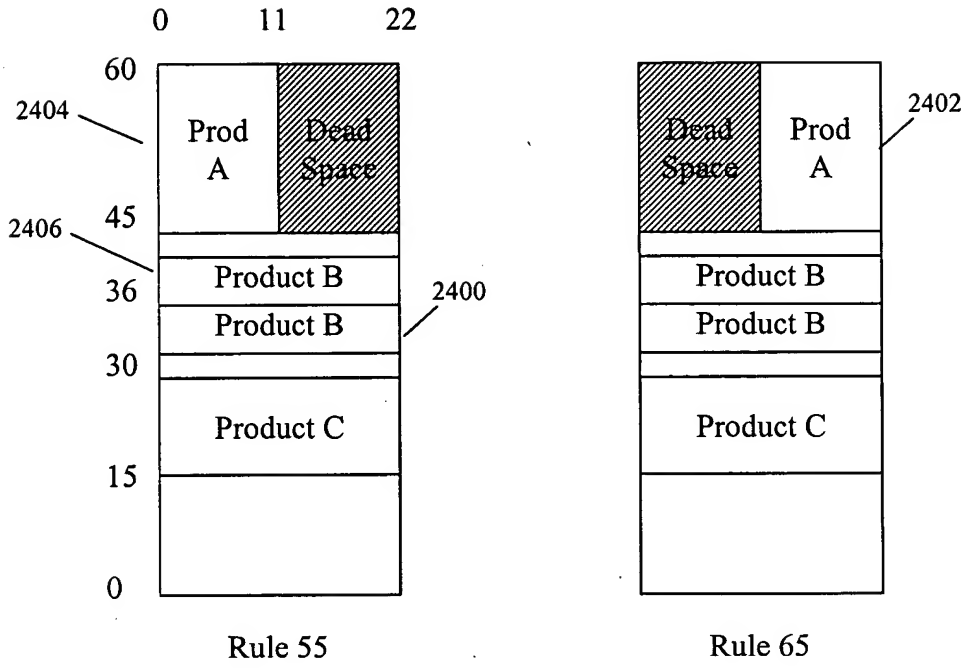

0
11
22
60
45
36
30
15
0
2404
2406
2400
2402
Prod A
Dead Space
Product B
Product B
Product C
Dead Space
Prod A
Product B
Product B
Product C
Rule 55
Rule 65

FIG. 24

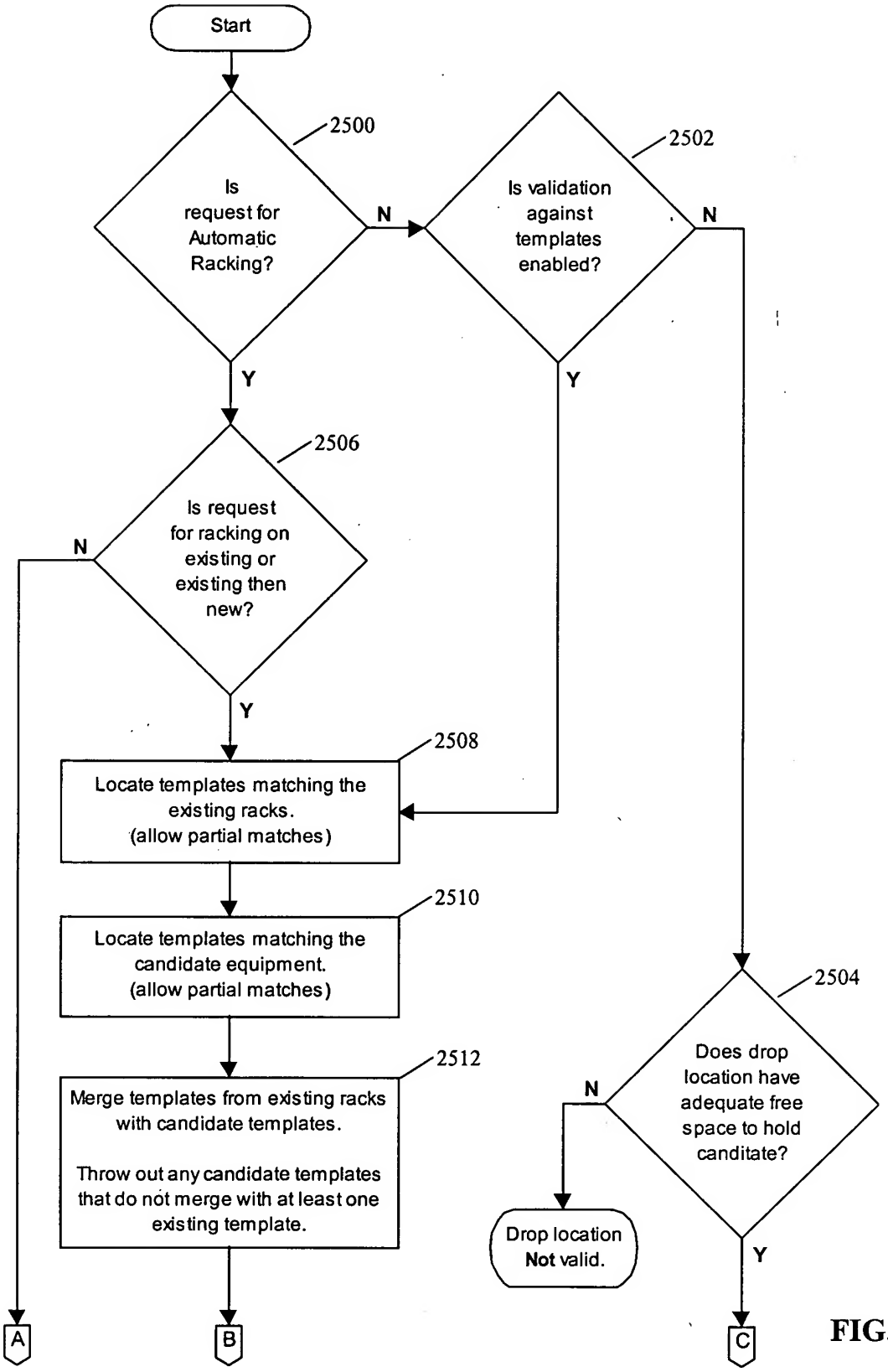

Start
2500
Is request for Automatic Racking?
N
2502
Is validation against templates enabled?
N
Y
Y
2506
Is request for racking on existing or existing then new?
N
Y
2508
Locate templates matching the existing racks. (allow partial matches)
2510
Locate templates matching the candidate equipment. (allow partial matches)
2512
Merge templates from existing racks with candidate templates.
Throw out any candidate templates that do not merge with at least one existing template.
2504
Does drop location have adequate free space to hold canditate?
N
Y
Drop location Not valid.
A
B
C

FIG. 25A

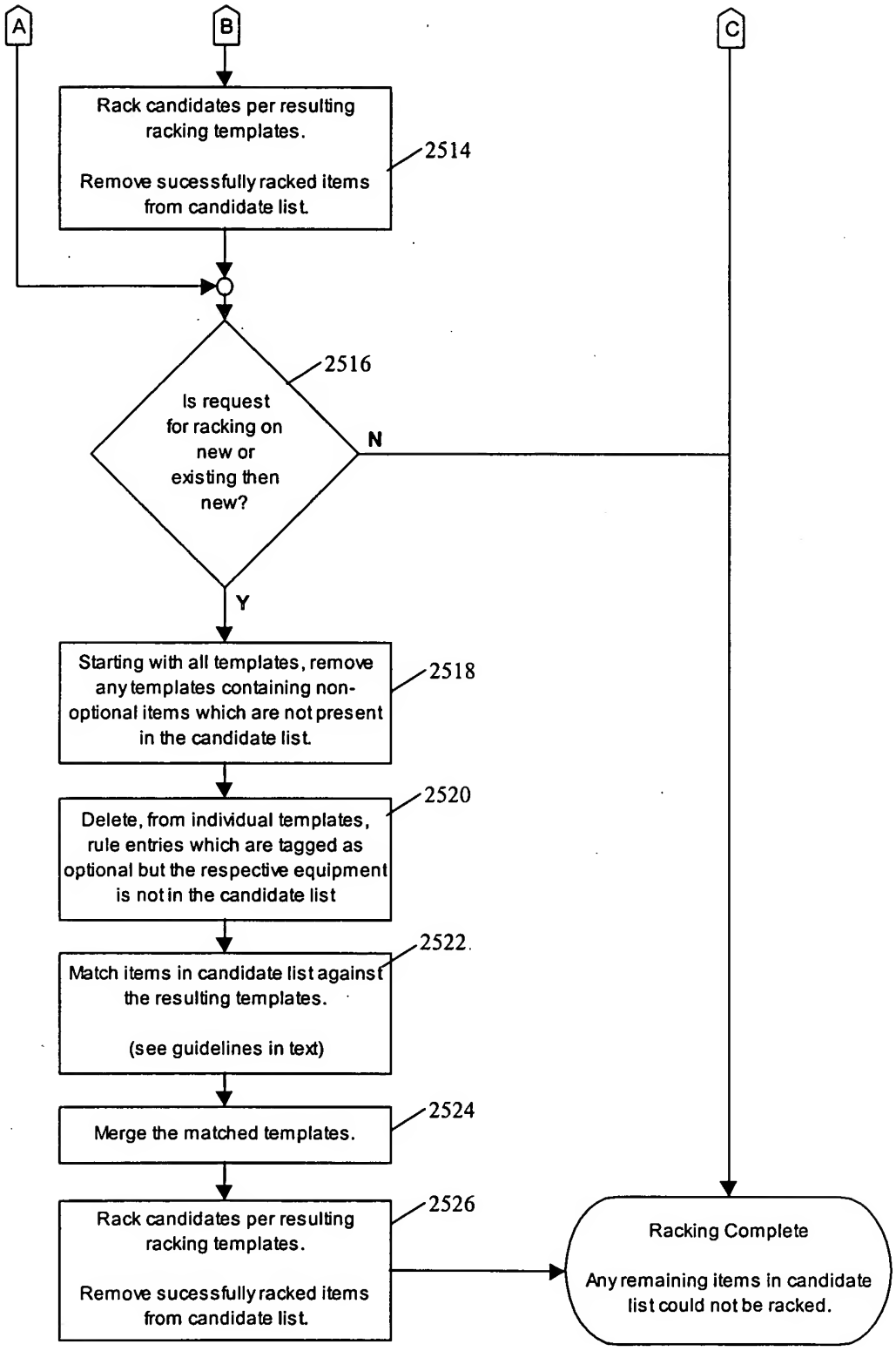

A
B
C
Rack candidates per resulting racking templates.
Remove sucessfully racked items from candidate list.
2514
2516
Is request for racking on new or existing then new?
N
Y
Starting with all templates, remove any templates containing non-optional items which are not present in the candidate list.
2518
Delete, from individual templates, rule entries which are tagged as optional but the respective equipment is not in the candidate list
2520
Match items in candidate list against the resulting templates.
(see guidelines in text)
2522
Merge the matched templates.
2524
Rack candidates per resulting racking templates.
Remove sucessfully racked items from candidate list.
2526
Racking Complete
Any remaining items in candidate list could not be racked.

FIG. 25B

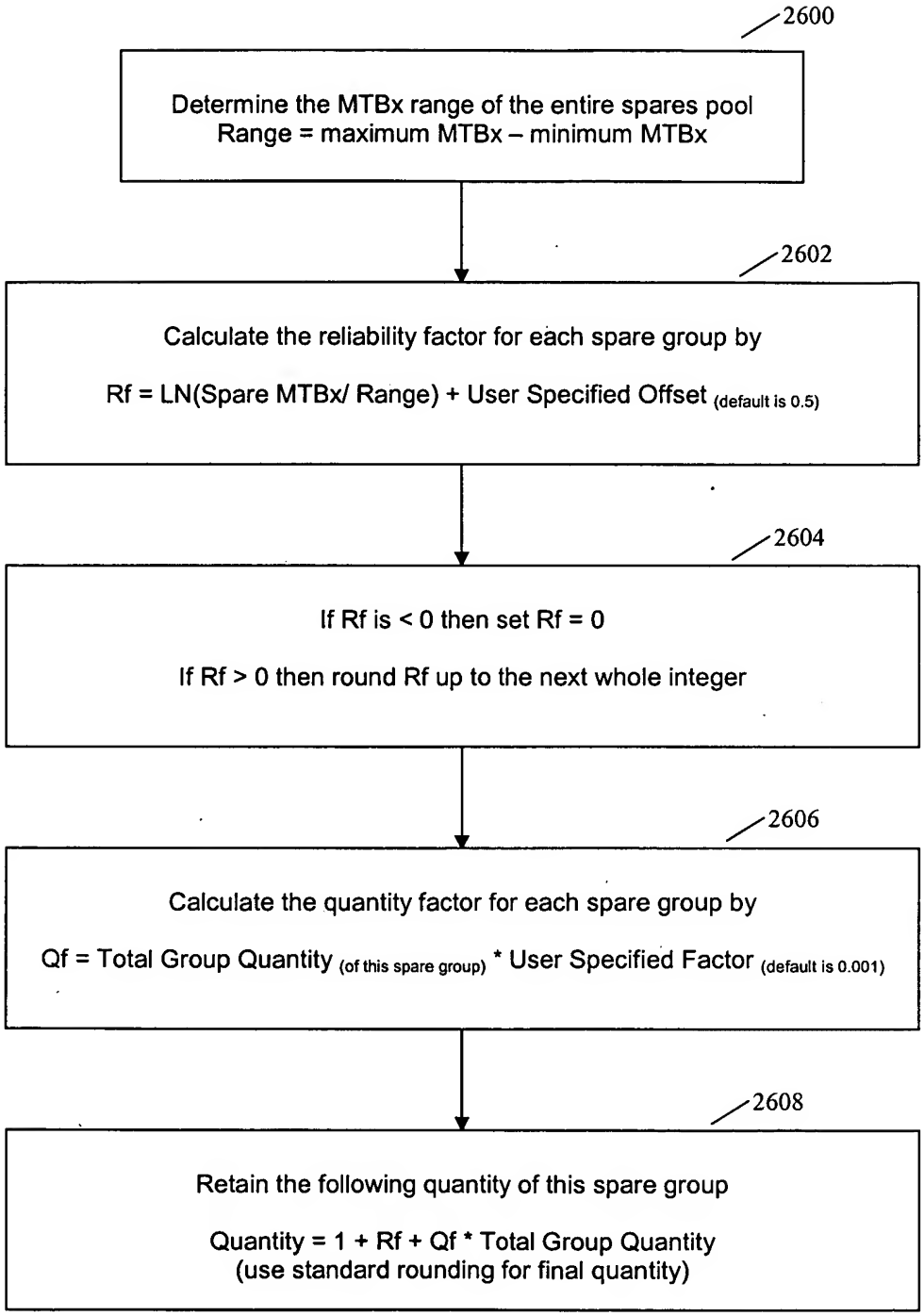

2600
Determine the MTBx range of the entire spares pool
Range = maximum MTBx – minimum MTBx
2602
Calculate the reliability factor for each spare group by
Rf = LN(Spare MTBx/ Range) + User Specified Offset (default is 0.5)
2604
If Rf is < 0 then set Rf = 0
If Rf > 0 then round Rf up to the next whole integer
2606
Calculate the quantity factor for each spare group by
Qf = Total Group Quantity (of this spare group) * User Specified Factor (default is 0.001)
2608
Retain the following quantity of this spare group
Quantity = 1 + Rf + Qf * Total Group Quantity
(use standard rounding for final quantity)

FIG. 26

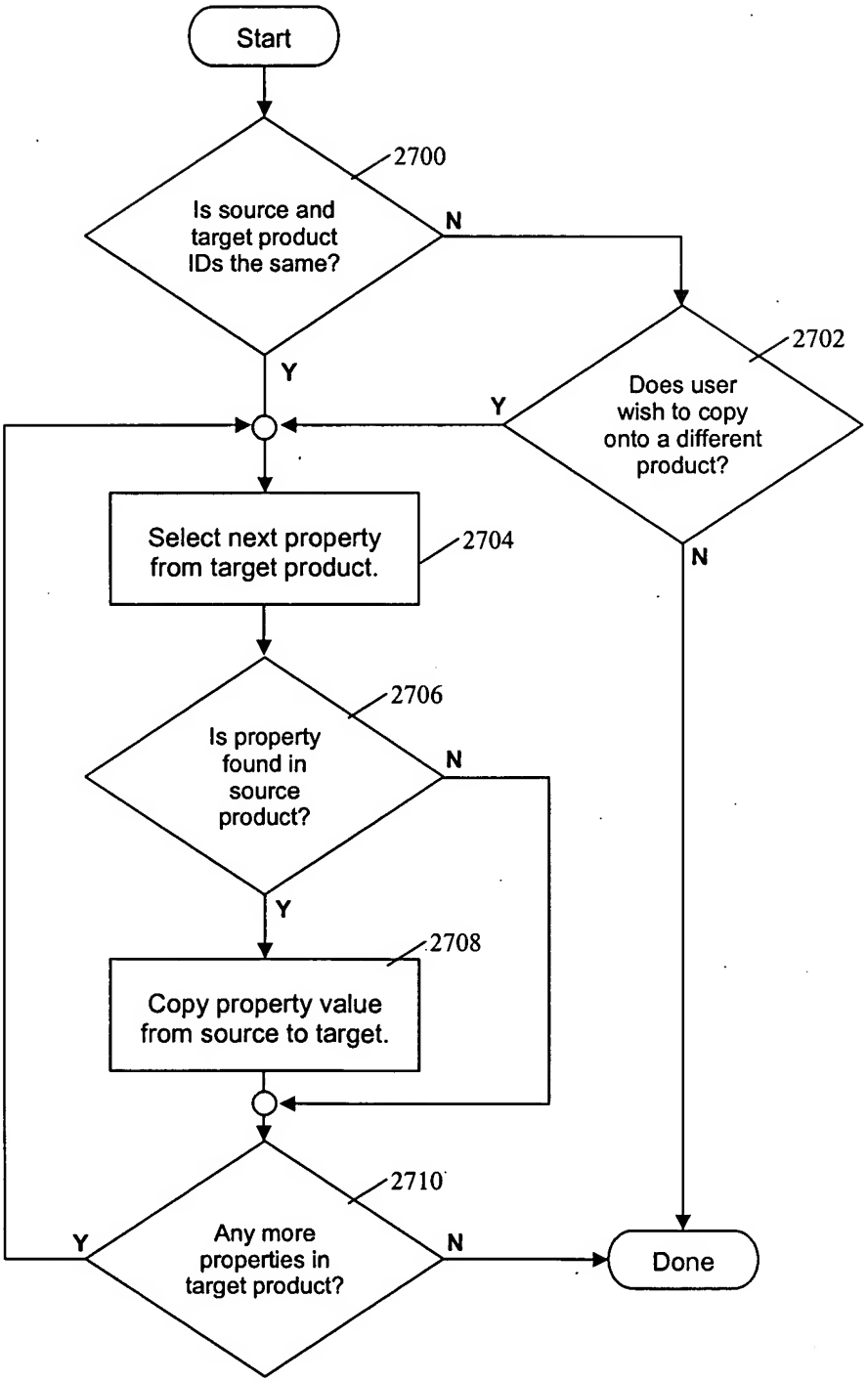

Start
2700
Is source and target product IDs the same?
N
Y
2702
Does user wish to copy onto a different product?
Y
N
Select next property from target product.
2704
2706
Is property found in source product?
N
Y
2708
Copy property value from source to target.
2710
Any more properties in target product?
Y
N
Done

FIG. 27

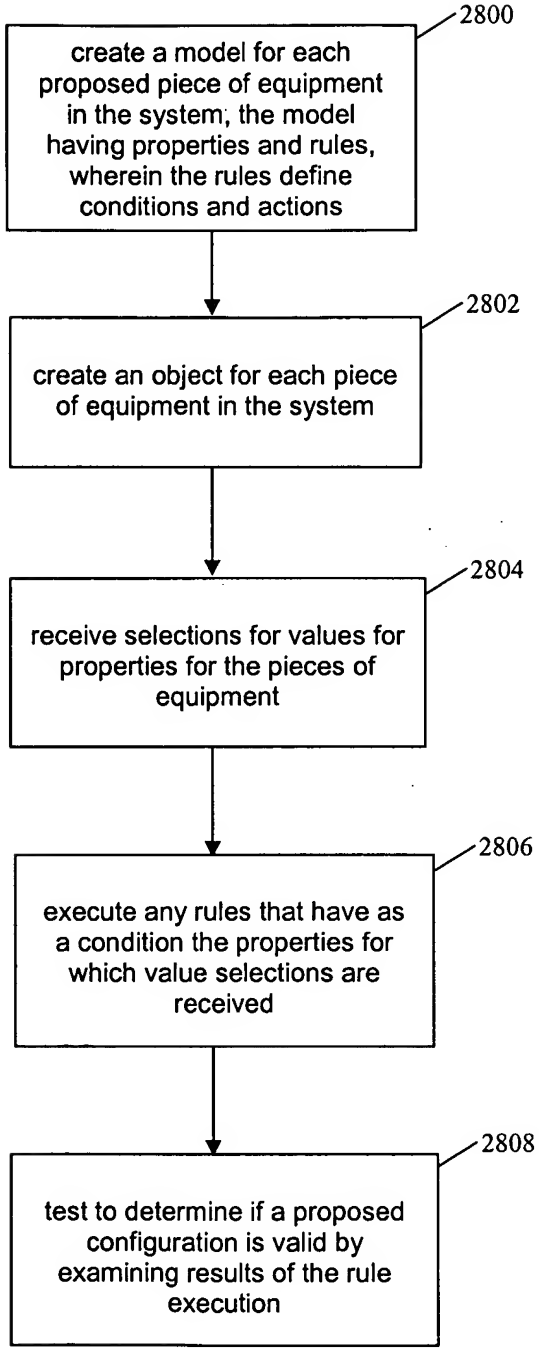

2800
create a model for each proposed piece of equipment in the system; the model having properties and rules, wherein the rules define conditions and actions
2802
create an object for each piece of equipment in the system
2804
receive selections for values for properties for the pieces of equipment
2806
execute any rules that have as a condition the properties for which value selections are received
2808
test to determine if a proposed configuration is valid by examining results of the rule execution

FIG. 28

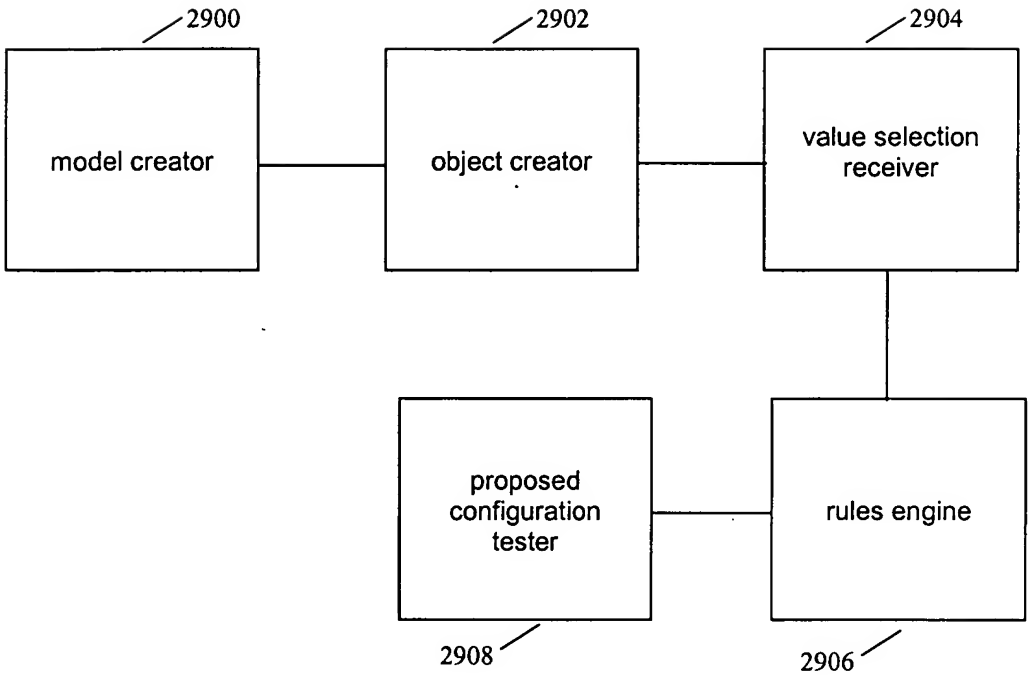

2900
2902
2904
model creator
object creator
value selection receiver
proposed configuration tester
rules engine
2908
2906

FIG. 29

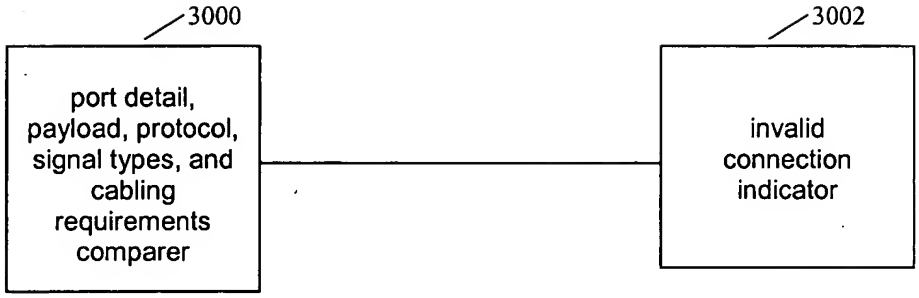

3000
port detail, payload, protocol, signal types, and cabling requirements comparer
3002
invalid connection indicator

FIG. 30

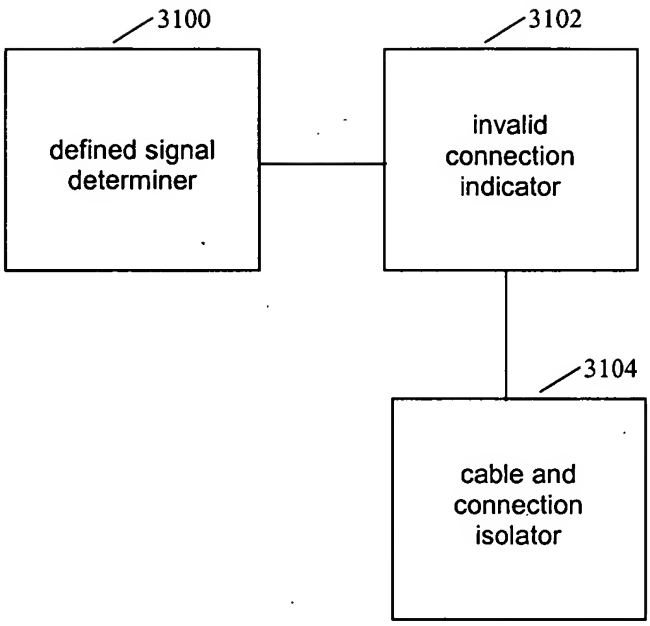

3100
3102
defined signal determiner
invalid connection indicator
3104
cable and connection isolator

FIG. 31

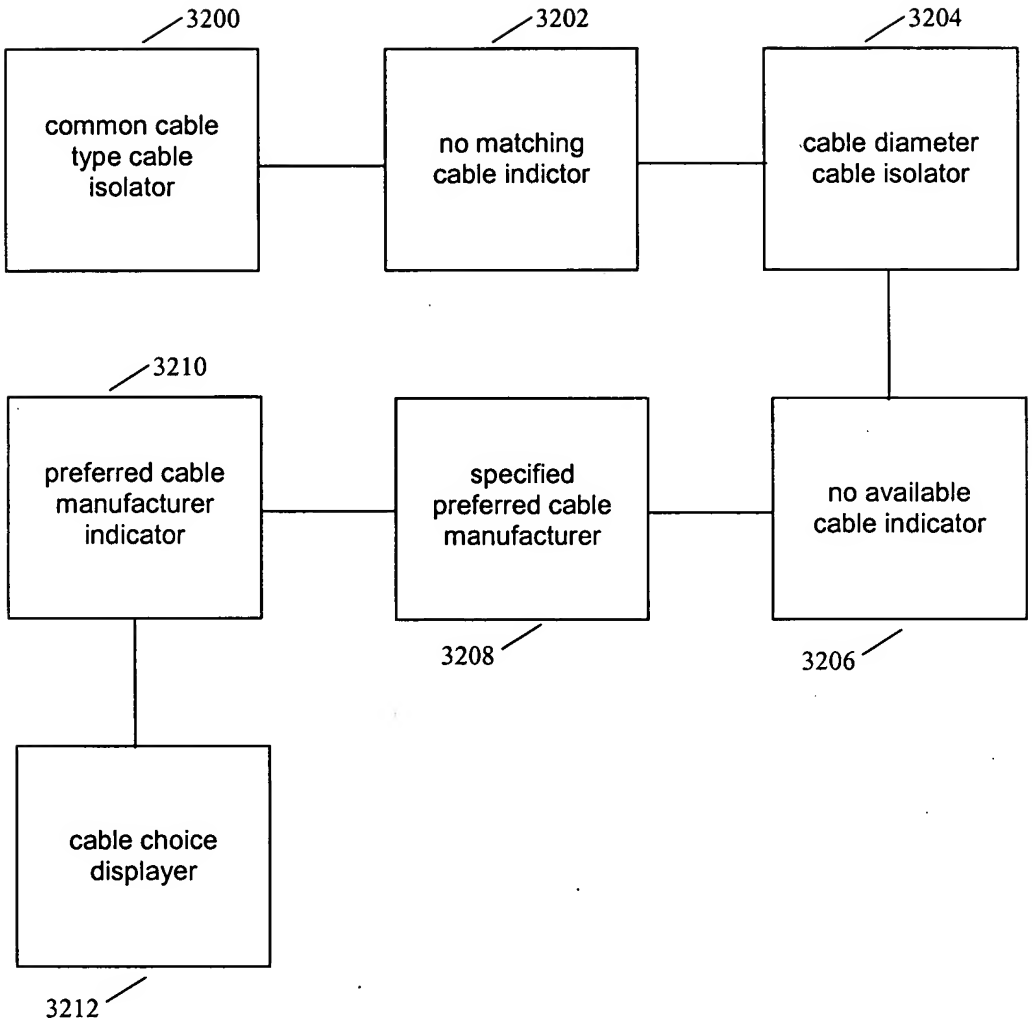

3200
common cable type cable isolator
3202
no matching cable indictor
3204
cable diameter cable isolator
3210
preferred cable manufacturer indicator
specified preferred cable manufacturer
3208
no available cable indicator
3206
cable choice displayer
3212

FIG. 32